trated the danger of depending on color for the identification of species or for characterization. In this case it was especially notable because the San José scale is, as a rule, rather uniform in its colorational features.

—Then Dr. Howard, under the title "Gossip about a European Trip, more or less entomological," gave a rapid but entertaining outline, illustrated by numerous photographs, of his travels in Europe during the past summer, particularly in France, Italy, Austria, Germany and Holland. He gave his impressions of the various entomological and other scientific institutions visited, of their work and of the workers themselves. Among many items of interest may be mentioned his account of the precautions taken in the malaria-infested regions of Italy to protect the inhabitants from mosquitoes.

At the conclusion of Dr. Howard's talk, Mr. Schwarz asked him if he agreed with the statement which Mr. Marlatt had made upon returning from his European trip, that injurious insects were much less numerous in Europe than in our country. Dr. Howard replied that he did, most emphatically.

—Mr. Caudell presented the following paper for publication:

SOME NEW OR UNRECORDED ORTHOPTERA FROM ARIZONA.

By A. N. Caudell.

In a collection of seventeen species of Orthoptera, received from Dr. R. E. Kunze, of Phoenix, Arizona, occur two new species and a few others of considerable interest by reason of their rarity or by their having been previously unrecorded from that Territory. Following is a list of the species represented, together with descriptions of those which are new.

Orphulella compta Scudd.
Ligurotettix kunzei sp. nov.

Head large; fastigum moderately sulcate, more so in the male, very slightly carinate centrally, or there tumescent; lateral foveolæ quadrate; frontal costa flat, very slightly sulcate just below the ocellus, broad, nearly as wide as the interspace between the eyes. Eyes prominent, a little elongate, slightly longer than the infraocular part of the genæ. Antennæ slightly thickening distally, apically acuminate, longer than the head and pronotum. Pronotum widening irregularly from in front backwards, obtusangulate behind, subtruncate in front; median carinæ

persistent, less distinct between the sulci; lateral carina present only posterior to the principal sulcus; lateral lobes vertical, the posterior angles rounded. Elytra and wings slender, reaching about one-fourth of their length beyond the end of the posterior femora. Hind femora considerably compressed, the upper margin more curved than the inferior.

Color—brown, mottled quite uniformly with fuscous, lighter in the male and much less maculate with fuscous, almost uniformly light grayish-brown. The head has an obscure postocular band and the upper part of the lateral lobes is somewhat infuscated, scarcely so on the metanotum, scarcely noticeable in the male. Abdomen much lighter in color than the rest of the body. Elytra in the female considerably flecked with fuscous, in the male almost immaculate. Posterior femora brownish externally, paler towards the tip, except the upper half of the genicular arc which is piceous, internally the geniculation is wholly black and the face is marked with one distinct and one imperfect black band dividing the surface into three nearly equal parts, the imperfect band being basal and not showing on the dorsal surface of the femora, while the perfect band continues over the dorsal surface and slightly onto the outer face, neither band showing in the ventral sulcus, which is uniformly light brown. Hind tibiæ dull yellow with a small black spot at either extremity below.

Length, body, ♂, 17 mm., ♀, 24 mm.; antennæ, ♂, 6 mm., ♀, 6.5 mm.; elytra, ♂, 16 mm., ♀, 21.5 mm.; hind femora, ♂, 9 mm., ♀, 11 mm.

Type No. 6705, U. S. National Museum.

One male and one female from Phoenix, Arizona, collected September 10, 1902.

This species is very like *Ligurotettix coquilletti*, but is much more slender, lighter in color, and the posterior femora are not so distinctly banded above. The measurements are also considerably greater.

Encoptolophus subgracilis sp. nov.

Head moderately large, about as broad as the posterior part of the pronotum; eyes quite prominent, about as long as the infraocular part of the genæ and generally with a more or less distinct fuscous band running horizontally across the middle, especially in the male. Vertex about as broad as one of the eyes, furnished posteriorly with a very distinct carina, the margins well elevated, converging in front to form the sides of the frontal costa, which is moderately narrow, approximately half as broad as the interspace between the eyes, equal in the female, narrowing apically in the male, quite deeply sulcate, especially at the ocellus, and below just failing to reach the clypeus. Antennæ short, very slightly broadening apically, at least in the female. Pronotum more slender than usual in this genus, broader behind and with the lateral lobes almost perpendicular and more angulate behind than usual in allied species; median carina better developed than in *pallidus*,

the nearest allied species, but in no sense cristate, evenly elevated and cut slightly before the middle; lateral carina distinct, fading anterior to the principal sulcus. Elytra and wings of equal length, considerably surpassing the posterior femora, the elytra more slender in proportion to their width than usual in members of this genus. Posterior femora broad basally, about equally rounded above and below, not or but little passing the tip of the abdomen in either sex, the carinæ well elevated.

Color—dark brown, mottled with fuscous. Head dark brownish,fuscous above, somewhat lighter on the sides and in front and furnished with an obscure postocular band, which, especially in the male, extends across the middle of the eye. Pronotum colored as the head with the inferior border of the lateral lobes lighter. Abdomen light yellowish brown, somewhat infuscated basally above. Elytra with the usual fuscous markings but somewhat less conspicuous than usual. Wings hyaline with the stigma deeply infuscated. Posterior femora quite uniformly brown externally with a somewhat obscure pallid pregenicular annulation; internally black with two light bands, one preapical and one median. Hind tibiæ greenish blue, the basal third pallid.

Length, body, ♂, 18 mm., ♀, 25 mm.; antennæ, ♂, ?, ♀, 6 mm.; elytra, ♂, 16 mm., ♀, 19 mm.; hind femora, ♂, 10 mm., ♀, 12 mm.

Type No. 6704, U. S. National Museum.

Two males and one female from Phoenix, Arizona, collected October 27, 1902.

This species is most nearly allied to *Encoptolophus pallidus* Bruner, from California, but the color is darker, in this regard standing between that species and *costalis*, and the general form is much more slender. It differs from *costalis* in its slenderer form, less conspicuously marked elytra and smaller size. When a number of specimens are examined there will probably be some variation found to exist in the length of the antennæ, this being the case with *E. pallidus*.

Trimerotropis vinculata Scudd.
Conozoa behrensi Sauss.
Anconia integra Scudd.
Schistocerca shoshone Thom.
Schistocerca vega Scudd.
Melanoplus aridus Scudd.

There are nine specimens of this species in the collection and one, a female, is quite noticeably tinged with green.

Melanoplus brownii Caud.

These specimens, eleven in number, agree with the type specimens except that the posterior tibiæ are bluish in color. The tibiæ of the types may have been faded in color.

Melanoplus differentialis Thom.
Melanoplus flavidus Scudd.

Melanoplus herbaceus Scudd.
Melanoplus pictus Scudd.
Melanoplus yarrowii Thom.

This species is represented by eighteen specimens, several of which are tinged with greenish.

In a small collection of Arizona Orthoptera, made by Mr. E. A. Schwarz some years ago, mostly in Madera canyon in the Santa Rita Mountains, are some quite interesting forms. The most interesting of these are here noted.

Vates sp.

An immature specimen belonging to the genus *Vates* occurs in the collection. It is too young to permit of a specific determination, but there is no doubt of its belonging to this genus.

Litaneutria spp.

In this collection occur six male specimens belonging to the genus *Litaneutria*. They evidently represent two species, but the condition in which the species of this genus have been left by Professor Scudder's insufficient descriptions* makes their determination impossible without an examination of the type specimens.

Ischnoptera uhleriana Sauss.

A male from Madera canyon is somewhat larger than those commonly taken in the East, measuring 18 mm. in length of elytra.

Latindia schwarzi sp. nov.

Testaceous, head brown. Thorax transversely elliptical. Elytra long, veined as in *L. delicatula*. Wings hyaline with an opaque infuscated area beyond the middle of the costal margin, at rest reaching slightly beyond the tips of the elytra. Cerci about as long as the pronotum, curved so strongly downwards as to almost form a circle.

Length, pronotum, 1.5 mm., elytra, 7 to 8 mm., width, pronotum, 2.25 mm.

Type No. 6706, U. S. National Museum.

Three male specimens from Madera canyon, Santa Rita Mountains, collected June 8 and July 7, 1898.

This species is very closely allied to *L. delicatula*, from Guatemala, the main differences seeming to be the longer wings and the less infuscated state of the under wings.

Myrmecophila formicarum Scudd.

Two specimens of this species were taken in Madera canyon with *Camponotus sp.* This seems to be the first published record of any species of this genus being taken in Arizona.

* Can. Ent., XVIII, p. 209, 1896.

Œcanthus argentinus Sauss.

Specimens of what I take to be this species were taken at Oracle, Arizona, and also at Hot Springs, by Mr. H. S. Barber. These specimens have a single straight line on the inner side of the first and second segments of the antennæ, and the wings are caudate. From the original description and the later treatment of the species by its author in the Biologia Centrali-Americana there appears to be considerable variation in the length of the wings and the markings of the antennæ. There is some variation in the antennæ of the specimens before me, some having unicolorous antennæ with scarcely a mark except the straight dash on the two basal segments, while others have several segments beyond the second deeply infuscated and the markings on the first and second segments of variable distinctness.